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incorporated into the completed work, which volume will be measured as prescribed in 109.1.

The quantity of "Cleaning and Sweeping" will be measured and paid for as provided in 403. Where a surface treatment is placed upon a base constructed as an item in the same contract, the conditioning and cleaning and sweeping of the base shall be considered as a part of the construction of the base and no additional compensation will be allowed for "Cleaning and Sweeping".

When items for maintaining traffic are included in the Contract, they will be measured and paid as provided in 636.

405.14-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items listed below, which prices and payments shall be full compensation for furnishing all the materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, and incidentals necessary to complete the work.

405.15-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
405001-*	SURFACE TREATMENT AGGREGATE, **	TON (MEGAGRAM)
405002-*	PATCHING AND LEVELING AGGREGATE, **	TON (MEGAGRAM)
405003-*	BITUMINOUS MATERIAL	GALLON (LITER)

* Sequence number

** Type of Aggregate

406 through 407 - BLANK

**SECTION 408
TACK COAT**

408.1-DESCRIPTION:

This work shall consist of preparing and treating an existing bituminous or concrete surface with bituminous material, and cover aggregate when called for on the Plans, in accordance with these Specifications and in reasonably close conformity with the lines shown on the Plans or established by the Engineer.

408.2-MATERIALS:

Materials shall meet the requirements of the following Subsections of Division 700:

MATERIALS	SUBSECTION	KIND OR GRADATION
Coarse Aggregate	703.1-4	7, 8, 8,9 or 10
Fine Aggregate	702.6	
Asphalt Emulsion		SS-1, SS-1h, CBAE Primer, AEM-1 RS-1 or MS-1
*Cationic Emulsified Asphalt	705.11	CMS-1, CRS-1, CSS-1, CSS-2, or CSS 1h
Water	715.7	

* May be used with aggregates other than gravel only if the aggregate asphalt combination meets the requirements of ASTM D 1664 for the dry aggregate coating test.

Unless otherwise indicated on the Plans or directed by the Engineer, any of the above types or grades of bituminous material may be used.

CONSTRUCTION METHODS

408.3-WEATHER RESTRICTIONS:

Tack coat shall be applied only when the weather and existing surface are satisfactory to the Engineer and when the temperature of the surface is 40° F (4° C) or above. When the surface temperature is less than 50° F (10° C), care must be exercised to assure that the tack coat "breaks" prior to the application of the asphalt concrete. When the surface temperature is 50° F (10° C) or above, the asphalt material may be asphalt emulsion or cutback asphalt.

408.4-EQUIPMENT:

Equipment shall include a power broom and power blower, a broom drag, equipment for heating bituminous material, a self-powered bituminous material pressure distributor, and an aggregate spreader. Equipment shall also include scrapers, hand brooms, shovels, and other equipment as may be necessary to thoroughly clean the base or surface. Equipment shall conform to the applicable requirements prescribed in 403.4.

408.5-PREPARED AND REPAIRING BASE OR EXISTING SURFACE:

No tack coat shall be applied until breaks, holes, depressions, and other irregularities in the base or existing surface have been repaired and cured sufficiently to permit the tack coat to be placed in a uniform application.

Patching and leveling material may be plant or road mixed. Hand patching will be permitted where necessary.

408.6-CLEANING AND SWEEPING:

When called for, this work shall be done as specified in 403.5.

408.7-APPLICATION OF BITUMINOUS MATERIAL:

Except when required to maintain traffic, the work shall be done on the full width of the section.

After the base or surface has been cleaned, when called for, and is in a dry condition, the bituminous material shall be applied by means of a pressure distributor. The rate of application of bituminous material shall be as specified in 408.11. Application temperatures of the bituminous material shall be within the range specified in Division 700 for the particular material being used. Asphalt emulsion, type SS-1 and SS-1h, and cationic emulsified asphalt types CSS-1 and CSS-1h, shall be diluted by the addition of water when directed by the Engineer.

The tack coat shall not precede the work of placing the subsequent surface course to such an extent that the treated surface will be injured during the interim. No patching and leveling or surface courses of any type shall be applied to the tacked surface until the bituminous material is thoroughly cured and dry. Tack coat shall not be applied over newly placed patching and leveling courses. However, to facilitate construction, minor (spot) areas that have been tacked, patched and leveled may be retacked and the quantity so used will be included for payment as part of the normal tack coat operation. The intent of the two preceding sentences, in conjunction with the next to the last paragraph of 401.20, is (1) to provide one tack coat application on the existing surface, although two applications, one over and one under, for minor (spot) patching and leveling areas, are permitted as indicated above, and (2) to limit payment for such operations to one application of the tack coat upon the existing surface for the entire project.

The surfaces of sidewalks, curbs, other structures, and trees adjacent to the area being treated shall be protected in such a manner as to prevent their being spattered or marred. Material used for such protection shall be removed and disposed of in a satisfactory manner. The distributor shall not be cleaned or discharged within the right-of-way, into borrow pits, or so as to pollute or block water courses.

408.8-APPLICATION OF COVER AGGREGATE:

When called for by contract documents or when directed by the Engineer, application of bituminous material shall be followed immediately with an application of clean dry aggregate at the rate specified in 408.11.

The aggregate shall be spread with spreaders. Immediately after the application of aggregate, the entire surface shall be broomed with a broom drag in order to insure uniform distribution of the aggregate.

408.9-JOINTS:

This operation shall be performed as prescribed in 405.10.

408.10-PROTECTION OF THE PAVEMENT AND TRAFFIC CONTROL:

The Contractor shall be responsible for the protection of the surface against damage by their equipment and personnel. Traffic shall not be permitted on any part of the work under construction until the treatment has cured sufficiently to prevent raveling or picking up under traffic. The applicable provisions of 636 shall apply for regulating traffic.

408.11-SEQUENCE OF OPERATIONS AND QUANTITIES OF MATERIALS:

The sequence of operations and quantities of materials to be used shall be as specified unless otherwise indicated on the Plans. The quantities shown are rates per square yard (meter).

- i. Clean and sweep.
- ii. Apply 0.20 to 0.30 gal. (0.9 to 1.4 liters) of bituminous material.
- iii. Spread 10 to 15 lb. (5.5 to 8 kg) of aggregate.

When bituminous material is specified for use as tack coat without tack coat aggregate, the quantity of bituminous material may be reduced at the option of the Engineer.

408.12-METHOD OF MEASUREMENT:

No materials shall be removed from the Project for any purpose until the operation has been completed and the quantities of materials incorporated into the operations have been determined, except when authorized by the Engineer.

The quantities of work done will be determined as follows:

The quantity of "Tack Coat Aggregate" shall be measured by the ton (megagram) of material complete in place and accepted.

The number of tons (megagrams) of "Tack Coat Aggregate" shall be determined by the total of the weights shown on receipted railroad freight bills when materials are shipped by rail; by actual measured displacement of barges certified by the producer when water shipments are made, providing materials delivered by the methods are not stockpiled or stored; or determined by the Contractor from the total of weigh slips for each vehicle load weighed on an approved standard scale or from digital printout slips from an automatic batching plant, and certified by the Contractor to be correct.

Truck scales shall be provided by the producer or Contractor, except that truck scales are not required where the material is weighed at properly calibrated automatic batching plant facilities which are equipped with digital print-out equipment. The scales shall be of sufficient size and capacity to weigh the heaviest loaded trucks that are used for delivery of the material.

All truck scales shall be mounted on solid foundations which will insure their remaining plumb and level. All truck scales shall be inspected and sealed by the West Virginia Division of Labor, Bureau of Weights and Measures, or

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other appropriate agencies of the State or its political subdivisions. The Division may, at its option, accept inspection and sealing by out of state agencies when the material is weighed outside West Virginia.

A weigh person shall be provided by the producer. The weigh person shall certify that the weight of the material, as determined either by the truck scales or from the digital printout of the weights, is correct.

Each truck shall be weighed empty prior to each load, except at automatic batch plants approved to operate without truck scales.

A digital recorder shall be required on all truck scales. The digital recorder shall produce a print record of the gross, tare and net weights, and the time, date, truck identification and project number. Provision shall be made for constant zero compensation and further provision shall be made so that the scales may not be manually manipulated during the printing process. The system shall be interlocked so as to allow printing only when the scale has come to rest. In case of a breakdown of the automatic equipment, the Engineer may permit manual operation for a reasonable time, normally not to exceed 48 hours, while the equipment is being repaired.

The weight of all surface moisture in the aggregate will be deducted from the pay quantity.

The quantity of "Bituminous Material" for tack coat shall be the number of gallons (liters), prior to dilution in the field, incorporated into the completed work and will be measured as prescribed in 109.1.

The quantity of "Cleaning and Sweeping" will be measured and paid for as provided in 403.5.

When items for maintaining traffic are included in the Contract, they will be measured and paid as provided in 636.

408.13-BASIS OF PAYMENT:

The quantities, determined as provided above, will be paid for at the contract unit prices bid for the items listed below, which prices and payments shall be full compensation for furnishing all the materials and doing all the work prescribed in a workmanlike and acceptable manner, including all labor, tools, equipment, supplies, and incidentals necessary to complete the work.

408.14-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
408001-*	TACK COAT AGGREGATE, **	TON
408002-*	BITUMINOUS MATERIAL	(MEGAGRAM) GALLON (LITER)

* Sequence number

** Type of Aggregate